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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Telephone Number Portability	)	CC Docket No. 95-116
	)	RM 8535
	)	

COMMENTS OF PACIFIC TELESIS GROUP ON FURTHER NOTICE OF PROPOSED RULEMAKING

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PACIFIC TELESIS GROUP

August 16, 1996

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Pacific Telesis Group, by its attorneys, respectfully submits these comments in response to the Commission's First Report and Order and Further Notice of Proposed Rulemaking in this proceeding.[1]

SUMMARY

The Commission, in its First Report and Order, prescribed standards that will require the establishment of third party maintained databases of ported numbers and impose significant expenses on existing telecommunications carriers to ensure that number portability can be provided effectively. Although Pacific Telesis believes that the standards chosen will preclude the most economic method of providing number portability, it will proceed with implementation, but urges the Commission to adopt cost recovery policies that permit it and the other telecommunications carriers to recover the complete costs of compliance with the Commission's long term number portability rules.

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[1] First Report and Order and Further Notice of Proposed Rulemaking, released July 2, 1996 (FCC 96-286) ("First Report and Order" or "Further Notice").

The attached Affidavit of Richard D. Emmerson, President and CEO of INDETEC International, Inc., reviews the Commission's Further Notice and shows how these costs should be recovered for optimum economic efficiency. Competitive neutrality in this case does not require the local exchange carriers (LECs) to subsidize either the interexchange carriers or the new competitive entrants. Recovering each carrier's costs from its own customers will ensure maximum economic efficiency.[2] In order to ensure fair and reasonable cost recovery:

- All telecommunications carriers should be allocated Types 1a and 1b - Shared-Industry Costs in proportion to their *retail* revenues.
- Type 1a, Type 1b, and Type 2 Costs associated with local number portability (LNP) should be identified and made recoverable from end users of communications.
- Type 1c Costs associated with transactional activities such as uploading, downloading, and queries to the regional databases should be charged directly to the carrier accessing the systems. These charges will in turn be recovered by the carrier as part of their Type 2 Costs.
- Each telecommunications carrier should be able to pass its Type 2 Costs, together with its share of Types 1a and 1b Costs, directly on to its own retail customers.
- Type 2 Costs should not be pooled and allocated. Rather, each carrier should bear its own cost. All direct costs of number portability should be able to be recovered.

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[2] Emmerson Affidavit at 5-6.

- Number Portability Costs should be recovered under Price Caps as a new rate element in the Carrier Common Line basket.

I. COST IDENTIFICATION AND RECOVERY

The Telecommunications Act of 1996 requires that costs of number portability "be borne by all telecommunications carriers on a competitively neutral basis . . . ."[3] The Commission has correctly interpreted "all telecommunications carriers" as encompassing all local exchange carriers, incumbent and new entrants; all interexchange carriers, and CMRS providers.[4] Competitively neutral is interpreted by the Commission as requiring costs to be shared in a manner that "does not affect significantly any carrier's ability to compete with other carriers for customers in the marketplace."[5] These criteria require spreading number portability costs broadly to all end users of telecommunications services.

Number portability will create costs for telecommunications carriers, such as Pacific Bell, that would not otherwise have been incurred. The entire network will be augmented to give customers the ability to change carriers without changing their telephone number. An incumbent Local Exchange Carrier (ILEC), such as Pacific Bell, has a significant investment in a network originally designed with the NPA associated with

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[3] 47 U.S.C. § 251(e)(2) (1996).

[4] Further Notice ¶ 209.

[5] *Id.* ¶ 131; *see id.* ¶ 210.

a specific end office. Conversion to long term number portability will cause the ILEC to incur substantial costs.

All of the costs should be recognized and provision made for full recovery of all of these new and increased costs from the users of telecommunications services. The FCC has identified three broad categories of costs: "(1) costs incurred by the industry as a whole, such as those incurred by the third-party administration to build, operate, and maintain the databases needed to provide number portability [Type 1 Costs or Industry-Shared Costs]; (2) carrier-specific costs directly related to providing number portability [Type 2 Costs or Carrier-Specific Number Portability Costs]; and (3) carrier-specific costs not directly related to number portability [Type 3 Costs or Carrier-Specific Incidental Costs]."[6] Pacific Telesis agrees with the Commission that these categories present a valid analytical framework upon which the regulatory treatment of these costs can be developed, but urges the Commission to identify all of the costs with greater specificity.

A. Industry-Shared Costs (Type 1 Costs)

The Industry-Shared Costs are a relatively small portion of the total cost of LNP for an ILEC, and the 1996 Telecommunications Act directs that they be shared by "all telecommunications carriers"[7]. The Commission has subdivided Type 1 Costs into three subcategories: (a) "non-recurring" or implementation costs, such as the initial costs of

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[6] *Id.* ¶ 208.

[7] 47 U.S.C. § 251(e)(2)(1996).

"developmental implementation of the hardware and software for the database;" (b) usage insensitive recurring costs, "such as the maintenance, operation, security, administration, and physical property associated with the database; and (c) usage sensitive costs, such as the cost of "uploading, downloading, and querying number portability database information."[8] Pacific Telesis agrees with these cost subcategories for Industry-Shared Costs.

Type 1 Costs are relatively easy to identify. The FCC has directed that the North American Numbering Council (NANC) select and oversee a North American Numbering Plan Administrator (NANPA) and regional Local Numbering Plan Administrators (NANPAs).[9] The LNPAs will create and maintain regional databases of ported numbers. These third party NANPA and LNPAs will be supported by payments from the telecommunications carriers. The NANPA and LNPAs will incur costs for startup including hardware and software for the regional databases of ported numbers and the development of procedures for use of the databases. These startup costs should be depreciated and amortized over some reasonable period in the range of five years. In addition, the hardware and software will require maintenance and regular improvements, and the NANPA and the LNPAs will incur normal administrative costs. These are the first two subcategories of Type 1 Costs.

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[8] Further Notice ¶ 216.

[9] *Id.* ¶ 93.

As discussed in Dr. Emmerson's Affidavit, and the Further Notice, these shared, usage-insensitive costs should be recovered from all telecommunications carriers in proportion to their gross revenues. The Commission suggests that charges paid to other carriers should be subtracted from gross revenues to determine the correct cost allocation. Dr. Emmerson explains however that:

> the same avoidance of double taxation applies to revenues *received* from other carriers. If the regional administrators do not exclude from gross revenues the revenues received from other carriers, then their assessments would also "tax" telecommunications service twice, once when sold to an end user and again when paid to the upstream carrier. Double taxation in a vertical chain of production is a well-known problem in public finance. Efficiency in production dictates that governments apply sales and excise taxes as close to the final stage of production as possible; that is, at the retail level.[10]

Therefore the Commission's proposal should be modified to subtract from gross revenues both payments made to other carriers as well as payments received from other carriers.

The Further Notice also requests comment on the FCC's tentative decision to recover these costs from all telecommunications carriers. This decision is well-grounded in law and policy. Section 251(e)(2) directs that the costs of implementation of the databases be "borne by all telecommunications carriers." Although Section 251(f)(2) permits some relief for small LECs from the requirement of number portability, it does not permit exemption, suspension, or modification of the requirement that all telecommunications carriers share in the costs.

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[10] Emmerson Affidavit at 4-5.

Moreover, contribution from all users of the interconnected networks to these shared costs is sound policy. The customers of all telecommunications carriers benefit from the availability of the number databases. In an era of number portability, the ability of a customer of any telecommunications carrier to complete a call depends, to some degree, on the availability of the number databases. This benefit obtains without regard to whether the carrier has implemented number portability in its service area, whether it is a CMRS, LEC, interexchange carrier, or reseller. Spread this broadly, the costs borne by each end user will be relatively small and have minimal impact on competition.

Type 1 Costs also include costs caused by use of the number databases (*i.e.*, uploading, downloading, and querying the database). These Type 1c usage-sensitive costs should be recovered directly to the carrier making use of the databases, who in turn will pass these costs on to its end users. Generally, economic efficiency is promoted by recovering costs that vary with usage in proportion to the use. Recovering usage sensitive costs by a flat rate encourages overuse of the resource, ultimately increasing the cost to all users. Usage sensitive charges for usage sensitive costs, however, ensure maximum use of the resource while discouraging wasteful overuse.[11] The fees for usage should be set by each LNPA with oversight from the NANC.

Another form of Type 1 Costs are the analogous costs of state-mandated SMS outside the system established under the auspices of the NANC. These costs should also be recovered in proportion to gross retail revenue and usage. To the extent that the FCC

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[11] *See* Further Notice ¶ 211.

permits the use of these SMS in lieu of the LNPA system, the state SMS costs should be used in lieu of the LNPA costs.

B. Carrier-Specific Costs (Type 2 Costs)

Type 2 Costs are those carrier-specific costs directly caused by the regulatory mandate that number portability be implemented. The Further Notice recognizes "the costs of purchasing switching software necessary to implement a long-term number portability solution."[12] Software purchase (and maintenance) is only one of many costs that will be the direct result of number portability. In addition, the following type of costs will be incurred as a direct result of the need to implement and provide local number portability (LNP):

1. *LNP base feature software enhancements.* Pacific Bell has switching equipment in is network, such as the IA/ESS, that was not expected to receive any feature upgrades. To accommodate LNP however, these switches will have to be upgraded to be able to receive the necessary software installations.

2. *Service Control Points (SCPs).* Depending upon the system architecture adopted to implement LNP, Pacific Bell may be required to establish SCPs to relieve the burden that would otherwise be placed on the regional SMS/SCP pairing. To the extent that these costs are not included in the Type 1 Costs, they should be recoverable as Type 2 Costs.

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[12] *Id.* ¶ 221.

3. *Signaling System Enhancements.* SS7 Links, Signaling Transfer Points (STPs), STP ports, and STP hardware all need to be augmented to accommodate LNP functionality.

4. *Trunking Augmentation and Rearrangements and Switch Capacity Upgrades.* These are representative of some of the additional hardware, software and trunking that will be required by Pacific Bell to operate the LNP service. These should be recognized and made recoverable as Type 2 Costs.

5. *Upgrades to Operational Support System (OSS).* LNP will make significant new demands on all operational systems and the direct costs associated with these changes to the OSS should be recoverable as Type 2 Costs.

6. *Advancement Cost.* Another cost will be incurred is the early expenditure of network modernization costs. As Dr. Emmerson explains:

> Incumbent LECs must undertake many network upgrades sooner than planned as a direct result of the additional signaling and processing brought on by making telephone numbers portable. In other words, compulsory SPNP [service provider number portability] will hasten the day that incumbent LECs will have to relieve certain network facilities or add new facilities. The increase in the net present value (NPV) of the expenditures from relieving or adding facilities sooner than would otherwise be efficient is directly traceable to the introduction of number portability. This increase in NPV is the incremental investment cost of the decision to require long-term SPNP.[13]

[13] Emmerson Affidavit at 3.

The largest part of costs of number portability will be incurred by existing carriers which must implement new hardware, software, and procedures to comply with this requirement. In a real sense, this feature will require a more complicated network design and operation. New carriers can build these features in from the start, but existing carriers must convert the existing network to the new design. These Type 2 Costs will be far greater than the Industry-Shared Costs and should be borne by the carrier incurring the costs. These specific costs, together with each carrier's share of Industry-Shared Costs, should be passed on directly to its end user in the form of a per line surcharge. In order to preserve some competitive parity, these costs should be separately stated on the bill to the end user as a line item, perhaps labeled "federally mandated number portability charge." Dr. Emmerson supports the use of an end user surcharge similar in nature to the current subscriber line charge. "A surcharge assessed per access line represents the most efficient practical means for incumbent LECs to recover the increased costs of number portability."[14]

These Type 2 Costs should be recovered, together with each carrier's share of Type 1 Costs, directly from its own customers on a monthly per line charge. In this fashion, each telecommunications carrier will have a strong incentive to operate efficiently and minimize these costs in order to remain competitive. Moreover, as explained by Dr. Emmerson, "the burden of complying with compulsory SPNP does not constitute an entry barrier in economic terms. In the absence of pooling, both incumbents and new

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[14] *Id.* at 9.

entrants alike would bear the costs of compliance. Incumbent LECs would not have a cost advantage that could impede effective competition."[15]

The Commission discusses pooling Type 2 Costs, and then spreading those costs across all carriers based on some allocator. As Dr. Emmerson explains, pooling costs in this manner requires some carriers to subsidize others: "Subsidies among competitors are incompatible with the competitive process and seriously impair incentives to minimize costs. Each carrier should bear the Type 2 costs it incurs and not bear the costs of equipping other carriers' network."[16] Pooling would also require detailed federal supervision of the cost recovery and pooling mechanism for all telecommunications carriers in the pool, including the new entrants, the interexchange carriers, and the ILECs. The public interest would not be served by the construction of the equivalent of a new rate regulation apparatus to facilitate pooling of internal costs among telecommunications carriers.

C. Carrier-Specific Incidental Costs (Type 3 Costs)

Type 3 Costs cover the actual cost of network modernization incurred to provide other services that incidentally are required to provide number portability. Further implementation of SS7, AIN/IN, and routine system upgrades can be placed in this last category. This last category of costs are also real costs that must be recovered from each

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[15] *Id.* at 7.

[16] *Id.* at 6.

carrier's customers, but Type 3 Costs are not so directly related to the implementation of number portability as to require special treatment. These costs are costs that must be incurred to operate each carrier's network and should not be subject to the requirements of Section 251(e)(2) of the Act. Each carrier should bear its own costs to be recovered from users of the carrier's services in the same manner as its current services.

II. PRICE CAP REGULATION

Pacific Bell and Nevada Bell are under price cap regulation and have limited opportunities to include additional costs in their rates. The Commission proposes that the Types 1 and 2 Costs be treated as exogenous costs.[17] It recognizes these costs are directly resulting from its Order and believes, therefore, they should be recoverable. We believe the Commission uses the term "exogenous" synonymously with "recoverable." The discussion that follows reflects this view.

The Commission should include the new long term number portability rate elements in the current Common Line basket. However, the rates should be updated annually using Section 61.38 of the Commission's Rules -- that is, a forecast of cost and volumes should be used for these rates -- as is done today for the End User Common Line Charges. This will ensure that the LECs will be able to recover these costs as subscribers change to other providers.

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[17] Further Notice ¶ 230.

Conclusion

Pacific Telesis Group urges the Commission to adopt rules allowing full recovery of number portability costs directly from end users. All telecommunications carriers should contribute to Type 1 Shared-Industry Costs in proportion to their gross retail revenues, and each telecommunications carrier should pass its Type 2 Carrier-Specific Number Portability Costs, together with its share of Type 1 Costs, directly on to its own retail customers. Number Portability Costs should be recovered under Price Caps as a new rate element in the Carrier Common Line basket.

Respectfully submitted,

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PACIFIC TELESIS GROUP

August 16, 1996

AFFIDAVIT OF RICHARD D. EMMERSON

I. INTRODUCTION

1. My name is Richard D. Emmerson. I am the President and CEO of INDETEC International, Inc. INDETEC International, Inc. provides consulting and training services to international telephone companies, Telephone Equipment Manufacturers, the United States Telephone Association (USTA), Bellcore, Commission staff members, partners and managers of large accounting and consulting firms, and interexchange companies (these services were formerly offered through INDETEC Corporation and Emmerson Enterprises, Inc.). My business address is 341 La Amatista, Del Mar, CA 92014.

2. I have prepared this affidavit for Pacific Bell in partial response to the Further Notice of Proposed Rulemaking ("FNPRM") in CC Docket No. 95-116 released on July 2, 1996.[1] The FNPRM asks for comments on two aspects of furnishing long-term service provider number portability ("SPNP"): (1) the structure of costs and (2) appropriate mechanisms for cost recovery. The FNPRM presumes that the industry will provide long-term SPNP using an Advanced Intelligent Network ("AIN") architecture and reaches tentative conclusions about cost recovery mechanisms employing a standard of competitive neutrality.

II. COST STRUCTURE

3. Properly interpreted and applied, the FNPRM's proposed classification of SPNP costs is sensible. A proper interpretation of costs requires keeping in mind that decisions cause costs, not products or services. Business firms incur or save costs by deciding to produce more or less of an existing product or service, to discontinue its production, to

alter its production processes or to introduce new products or services. The relevant decisions in this instance have been to make number portability mandatory and to establish the geographic extent and timing of its availability. Congress and the President made the first decision when they enacted the Telecommunications Act of 1996 ("the Act"). The Commission made the second decision in its First Report and Order in this docket. These decisions have identifiable cost consequences.

4. The FNPRM tentatively concludes that furnishing long-term SPNP produces three types of costs.[2] The first type (Type 1 or Shared-Facilities Costs) includes the costs incurred by the industry as a whole. Type I costs fall into three subcategories: (1) nonrecurring costs, (2) usage-insensitive costs, and (3) usage-sensitive costs.[3] Nonrecurring Type 1 costs include the necessary costs of developing regional data bases known as Service Management Systems ("SMSs"). These costs are in the nature of development and capital expenditures. Volume-insensitive costs are the costs of operating, maintaining, updating and administering those databases and the underlying software. These costs represent fixed costs as customarily understood. Finally, usage-sensitive costs are the costs of entering and detecting number and carrier information into and retrieving it from the regional SMSs.

5. The second type of long-term costs (Type 2 or Direct Carrier-Specific Costs) consists of the costs incurred by individual carriers in equipping their networks to accommodate SPNP. Type 2 costs should include the costs directly traceable to the decision to deploy ubiquitously long-term SPNP. While the FNPRM acknowledges that part of these costs include the switching software associated with number portability,[4] there is much more besides. Additional costs that incumbent LECs will incur providing long-term SPNP include the costs of upgrading switches, augmenting SS7 signaling systems, ex-

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1 Telephone Number Portability, First Report and Order and Further Notice of Proposed Rulemaking, CC Docket No. 96-115, FCC 96-286 (rel. July 2, 1996) (Number Portability First R&O and FNPRM).

2 *Ibid.*, 🕮 208.

3 *Ibid.*, 🕮 216.

4 *Ibid.*, 🕮 221.

panding transport capacity, modifying service control points (SCPs), and adapting billing and operations support systems. These costs are directly traceable to long-term SPNP because incumbent LECs must incur them to handle the additional signaling and processing required by the AIN network architecture. However, these additional costs are not the only additional costs incumbent LECs will incur to supply long-term SPNP.

6. Contrary to the FNPRM's tentative conclusion regarding the third type of costs,[5] many network improvements will become necessary because of the decision to require deployment of long-term SPNP. The FNPRM describes its third type of costs (Type 3 or Indirect Carrier-Specific Costs) as not directly related to the provision of SPNP and alludes to network upgrades necessary to implement an AIN solution. This conclusion is, in my opinion, mistaken. Incumbent LECs must undertake many network upgrades sooner than planned as a direct result of the additional signaling and processing brought on by making telephone numbers portable. In other words, compulsory SNPN will hasten the day that incumbent LECs will have to relieve certain network facilities or add new facilities. The increase in the net present value (NPV) of the expenditures from relieving or adding network facilities sooner than would otherwise be efficient is directly traceable to the introduction of number portability. This increase in NPV is part of the incremental investment cost of the decision to require long-term SPNP. The economics literature refers to such costs as "advancement costs" due to the "advancement effect". Advancement costs are recognized to be an important component of incremental costs. Consequently, the Commission should consider the increased NPV of the incumbent LECs' required network improvements as a Type 2 cost rather than a Type 3 cost.

III. COST RECOVERY: SHARED-FACILITIES COSTS (TYPE 1 COSTS)

7. The FNPRM tentatively concludes that regional SMS administrators should assess all telecommunications carriers nonrecurring and volume-insensitive Type 1 costs according to their proportionate share of gross telecommunications revenues, less pay-

ments to other carriers.[6] This tentative conclusion has two parts. The first part is that all telecommunications carriers should share in financing the investments and paying for the fixed costs associated with establishing and running regional SMSs. Such a prescription is entirely appropriate. Number portability exhibits at least one of the characteristics of a public good: some carriers may benefit from the availability of number portability even though they might not buy it directly. Sharing in the Type 1 costs of SPNP according to an assessment similar to the one proposed in the FNPRM allows the regional administrators to capture the benefits received. I support this conclusion.

8. The second part of the FNPRM's tentative conclusion about recovering nonrecurring and volume-insensitive Type 1 costs is that gross telecommunications revenues net of payments to other carriers is an appropriate basis for sharing such costs. This conclusion is partly correct. An assessment based on gross revenues may usefully be viewed as a sales tax on telecommunications services. While all taxes distort efficient outcomes, taxes applied at upstream stages in a vertical chain of production often are more distorting than taxes on final goods. For example, if the FNPRM did not call for excluding payments to other carriers from gross revenues, then the regional administrators' assessments would essentially "tax" portions of telecommunications revenue twice, once when received by the upstream carrier and again when passed along in the retail prices of the downstream carrier.

9. Conversely, however, the same avoidance of double taxation applies to revenues *received* from other carriers. If the regional administrators do not exclude from gross revenues the revenues received from other carriers, then their assessments would also "tax" telecommunications services twice, once when sold to an end user and again when paid to the upstream carrier. Double taxation in a vertical chain of production is a well-known problem in public finance. Efficiency in production dictates that governments apply sales and excise taxes as close to the final stage of production as possible; that is, at

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5 *Ibid.*, 🕮 226.

6 *Ibid.*, 🕮 213.

the retail level.[7] Thus, in the interests of productive efficiency, the FNPRM's prescription for assessing nonrecurring and usage-sensitive Type 1 costs should also exclude from gross revenues the revenues received from other carriers.

10. Regarding the recovery of the last subcategory of Type 1 costs, the FNPRM notes that the regional administrators could assess usage-sensitive charges for feeding number portability data into and retrieving it from the SMSs.[8] In the alternative, the FNPRM notes that the administrators could recover usage-sensitive costs through the same assessment mechanism used for recovering fixed Type 1 costs and initial investment costs.[9] The alternative method proposed confuses pricing with financing. Professor William Vickrey of Columbia University warns us of the pitfalls of this confusion in the context of building transportation facilities:

> . . . *prices are for rationing, not financing*. There are many ways in which transportation facilities, among others, can be financed, but there is no other method nearly so flexible, so effective, and so generally applicable as the suitable adjustment of prices for inducing a reasonably efficient pattern of utilization of whatever facilities are provided. If prices set so as to promote efficient utilization turn out to cover more or less than the costs of providing a service, excess funds can easily be put to good use elsewhere, and deficiencies can be made up by any number of devices. But if a level or pattern of prices is imposed that fails to bring home to the user the marginal social costs of the operation in relation to the available alternatives, there is no easy way of achieving comparable efficiency. The level of detailed administrative and other controls that would be necessary to achieve comparable results would be vastly more costly, if not subversive of free choice (emphasis in the original).[10]

It follows from Vickrey's advice that the regional administrators should price usage of the SMSs to encourage optimal utilization of the network capacity installed and discour-

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[7] P. A. Diamond and J. A. Mirrlees, "Optimal Taxation and Public Production, I: Production Efficiency," *American Economic Review*, Vol. 61 (March 1971), pp. 8-27.

[8] *Ibid.*, 🕮 218.

[9] *Ibid.*, 🕮 219.

[10] William Vickrey, "Pitfalls in the Financing and Planning of Transport Investment," in Marvin L. Fair and James R. Nelson (eds.), *Criteria for Transport Pricing* (Cambridge, MD: Cornell Maritime Press, 1973), p. 144.

age wasteful overuse. Regional administrators could then adjust the Type 1 assessments for any surpluses or deficiencies in the funds so generated.

IV. COST RECOVERY: DIRECT CARRIER-SPECIFIC COSTS (TYPE 2 COSTS)

11. The FNPRM seeks comment on pooling Type 2 costs.[11] Cost pooling is an ill-advised step. Pooling Type 2 costs would inevitably result in some carriers subsidizing others including their competitors. The very purpose of pooling is to assign responsibility for financing (to carry Vickrey's words to the present setting) costs in proportions different from the proportions of costs that the participants actually incur. Subsidies among competitors are incompatible with the competitive process and seriously impair incentives to minimize costs. Each carrier should bear the Type 2 costs it incurs and not bear the costs of equipping other carriers' networks.

12. Asking carriers to bear, most efficiently, the costs of equipping their networks with SPNP and not the networks of others is competitively neutral. As defined in Commission's Order, competitively neutral means that the recovery of SPNP costs cannot "affect significantly any carrier's ability to compete with other carriers for customers in the marketplace."[12] The Order further explains that competitive neutrality requires that no carrier have an incremental cost advantage and all carriers have an equal opportunity to earn a normal rate of return.[13] Cross carrier subsidies do no comport with these requirements.

13. A beneficial competitive neutrality standard must distinguish between promoting competition and protecting competitors. Economics provides a guide to making this distinction. Clearly, the FNPRM's concern is that the burden of equipping telecommunica-

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11 Number Portability First R&O and FNPRM, 🕮🕮 221.

12 *Ibid.*, 🕮 130.

13 *Ibid.*, 🕮🕮 132 and 135.

tions networks to handle long-term SPNP not become an obstacle to effective competition. In economic terms, obstacles to effective competition constitute entry barriers. Nobel Laureate George Stigler defines an entry barrier as "a cost of producing (at some or every rate of output) which must be borne by a firm which seeks to enter an industry but is not borne by firms already in the industry."[14]

14. Clearly, the burden of complying with compulsory SPNP does not constitute an entry barrier in economic terms. In the absence of pooling, both incumbents and new entrants alike would bear the costs of compliance. Incumbent LECs would not have a cost advantage that could impede effective competition. The absolute capital requirements produced by the associated network upgrades do not create a barrier to entry. Professor Franklin Fisher of MIT and his associates explain:

> The fact that a plant has to be built, a distribution network set up, employees hired, and other skills and equipment required , all of which may require a substantial investment, does not in itself constitute an economically relevant barrier to entry as long as the incumbent firm also had to make such an investment of money, time, and skill or would have to make a comparable current investment to expand.[15]

On the other hand, relieving new entrants of a part of SPNP burden through cost pooling would be tantamount to subsidizing their entry at the expense of established carriers. Such relief would not be competitively neutral.

15. Having each carrier bear its costs of SPNP and not the costs of others is also consistent with the normal return aspect of the Order's competitive neutrality standard. The Order's apparent concern is that furnishing number portability has large fixed costs that would disadvantage new entrants. According to this line of argument, the disadvantage arises because new entrants start at a small scale and cannot initially spread the large

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[14] George J. Stigler, *The Organization of Industry* (Chicago: University of Chicago Press, 1968), p. 67.

[15] Franklin M. Fisher, John J. McGowan and Joen E. Greenwood, *Folded, Spindled, and Mutilated: Economic Analysis and* U.S. vs. IBM (Cambridge, MA: MIT Press, 1983), p. 166.

fixed number portability costs over a large sales volume.[16] Therefore, so the argument goes, good public policy probably requires subsidizing new entrants until they can attain larger size and meet the lower unit costs of incumbents. This is a misplaced concern.

16. The concern with large fixed costs is essentially a question of comparing the losses that new entrants might incur in the early stages of their existence with future profits. All firms make such comparisons when choosing the scale of their operations and expansion plans, regardless of whether they are entering a market once protected by legal entry barriers. If the expected rate of return exceeds the rate obtainable on alternative investments, the firm can borrow the funds necessary to cover its early losses. No special protection or subsidization seems required. The argument would have to be that capital markets are imperfect and cannot recognize profitable entry strategies. This is an argument for improving the functioning of capital markets, not subsidizing entry. In any event, capital market imperfections are unlikely barriers to entry. Professor John McGee of the University of Washington explains:

> . . . some complain that capital markets are either imperfect or perverse. No market is perfect. Capital markets have financed firms that go broke, firms that do middling-well, and firms that have succeeded spectacularly. But money capital is among the most homogeneous and mobile of resources, and those who deal in it are both knowledgeable and attracted to wealth. Investors on both sides of that market have the best information and best reason to put capital where rise-adjusted gains are highest. A theory of perverse capital markets implies that outsiders will be able to find a lot of discrepancies that would make them and insiders rich. Taking advantage of such discrepancies tends to remove them. They are not likely to persist.[17]

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16 Number Portability R&O and FNPRM, 🕮 135.

17 John S. McGee, *Industrial Organization*, (Englewood Cliffs, NJ: Prentice Hall, 1988), p. 155.

V. COST RECOVERY: END-USER CHARGES

17. Finally, the FNPRM asks for comment on whether LECs should charge end users for the costs of long-term SPNP.[18] The Commission should allow LECs to recover their Type 1 and Type 2 costs, including the increased NPV of advancing network modernization, through a surcharge on access lines. A surcharge assessed per access line represents the most efficient practical means for LECs to recover the increased costs of number portability.

18. As implied in the FNPRM's classification scheme, furnishing long-term SPNP has its own separately identifiable incremental costs. While separately identifiable, these costs are those of a public good and are therefore common to the full array of LEC services and not directly attributable to any particular service or set of services. Mandatory long-term SPNP costs fit the economist's description of common costs in that LECs will not be able to avoid them by discontinuing individual services or groups of services. An LEC could only avoid them if it discontinued *all* of its services.

19. LECs must recover the common costs of number portability if they are to cover their total costs and remain in operation. The key is to impose a charge that results in the least distortion of economic efficiency. The most efficient method of paying for the common costs of number portability is a lump-sum tax. Because they are independent of the quantity bought, lump-sum taxes would not result in uneconomic stinting in the use of telecommunications services. Obviously, however, lump-sum taxes are an impractical solution.

20. In the telecommunications industry, the next best solution to a lump-sum tax is a surcharge on access lines. An access line surcharge for number portability would be similar in nature to the current federally imposed subscriber line charge (SLC) and would have similar effects. The reason it would have similar effects is that the demand for ac-

cess is very inelastic. Published estimates reveal that given a penetration rate of 93 percent, a 10 percent increase in the price of access would lead to about a half of one percent reduction in telephone penetration.[19] Given this inelasticity, a surcharge on access lines would reduce economic efficiency very little while enabling LECs to recover the common costs of mandatory number portability. This problem is further mitigated by special subsidy programs designed to provide universal service. In my opinion, the cost-benefit assessment weighs most heavily on the benefits of a surcharge on access lines.

VI. Declaration

I declare under penalty of perjury that the foregoing is true and correct. Executed on August 15, 1996 at Del Mar, California.

Richard D. Emmerson

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[18] Number Portability R&O and FNPRM, ¶¶ 222-223.

[19] Jerry Hausman, Timothy Tardiff and Alexander Belinfante, "The Effects of the Breakup of AT&T on Telephone Penetration in the United States," *American Economic Review Papers and Proceedings*, Vol. 83, No. 2 (May 1993), p. 182.